From: N3AKD@aol.com
To: Ira Keltz. Alan Scrime
Date: 4/3/03 9:42AM
Subject: Broadcast Auxiliary Ex Parte Notice; SBE Presentation

Greetings, Gentlemen. Attached is a file of the ex parte notice I have been attempting to file in ET Docket 95-18; IB Docket 01-185; and ET Docket 00-258, about which we met with you folks on March 20, 2003. In each case, I receive a notice that the proceedings are not open for submissions.

I would be grateful for instructions as to how to proceed at this point.

Kind regards, Chris Imlay

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ET 95-18
IB 01-185
ET 00-258

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NOTICE OF ORAL EX PARTE PRESENTATION

On March 20, 2003, representatives of the Society of Broadcast Engineers, Incorporated (SBE) and other representatives of the Broadcast Auxiliary Service (BAS) and the Local Television Transmission Service (LTTS) met with staff of the Commission's Office of Engineering and Technology to discuss matters affecting the relocation of BAS and LTTS licensees from the 1990-2025 MHz band to the remaining 2025-2110 MHz BAS/LTTS band. This presentation addressed issues in ET Docket 95-18; ET Docket 00-258; and IB Docket 01-185.

Present on behalf of SBE in person or by speakerphone were Mr. John Poray, SBE Executive Director; Mr. Raymond Benedict, SBE Vice President; Mr. David Otey, SBE Frequency Coordination Director; Mr. Dane Ericksen, SBE FCC Liaison Committee Chair; Christopher D. Imlay, SBE General Counsel; Mr. Andy Bater, Tribune Broadcasting; and Mr. Anthony Finizio, President of Microwave Radio Communications.

FCC staff present included Mr. Bruce Franca; Geraldine Matise, Esquire; Mr. Ira Keltz; **Mr.** Tom Derenge; and Mr. *Gary* Thayer, Esquire.

The topics discussed addressed BAS and LTTS relocation issues and cost reimbursement issues. The substance of the presentation followed the attached memorandum, which addressed specific questions addressed to the presenters by the Commission staff.

Topics for Discussion regardine BAS relocation in the 1990-2110 MHz band

Questions:

1. Generally - what, if anything, has changed that would affect your previous filings in the **AWS** and **BAS** reallocation dockets?

In general, nothing has changed in terms of **FCC** decisions which would affect the previous filings made by SBE in the AWS and BAS reallocation dockets. **SBE's** position on this subject, which we believe to be reflective of the concerns of the broadcast industry generally on this subject, is that there should be a single, nationwide conversion from 17 MHz wide analog channels to approximately 12 MHz channels, probably using digital emissions only. The same concerns expressed earlier in comments about the market-by-market conversion in a two-phase procedure, and the option of having fewer than seven channels post-conversion rather than seven, narrowband channels at 2025-2110 MHz still exist. Most especially, the market-by market conversion process fails to address adjacent market decisionmaking which may be at variance with the band planning done in any given market. **As** well, it fails conceptually to address nationwide, itinerant users, such as LTTS licensees and broadcast network entities, which would have to be equipped to address different band plans for different markets.

In terms of what has changed in evaluative planning since the various docket proceedings, especially the 95-18 Second Report and Order and the 01-185 Report and Order, there have been various studies made of the practicalities of two-phase conversion of the broadcast industry. The findings, generally stated. are that an interim conversion to 13.5 MHz bandwidth analog is impractical for a number of reasons.

Another issue that has been settled recently is the obligation of **MSS** (or, in general, any displacing entity) to provide replacement cost reimbursement for relocation expenses to broadcasters. The ICO v. FCC appeal in the United States Court of Appeals was voluntarily dismissed by ICO, thus resulting in finality of the Commission's decision in Docket 95-18 to require full replacement cost for equipment and reimbursement for expenses in reconfiguration of equipment incurred in the course of relocation.

Finally, what has changed since the issuance of the Second Report and Order in Docket 95-18 (as opposed to the **AWS** or terrestrial component decisions) is that there has been confusion in the industry about the practicalities of market-by-market negotiations versus collective negotiations between broadcasters and **MSS** entities (principally limited to ICO Services and its successors). Broadcasters have been advised by counsel in many cases that collective negotiations are impossible due to antitrust considerations, and that only station-by-station negotiations can occur, and only on a market-by-market basis. There has only been limited negotiation on an individual basis, and in the case of certain attempts by LTTS licensees to negotiate with ICO, the position of the latter has most recently been that **MSS** is not obligated to negotiate with nor reimburse LTTS licensees for conversion.

2. What is the state of negotiations with MSS in light of the suspension of the expiration of the mandatory negotiation period?

The extent to which SBE and its affiliated Ad Hoc *2* GHz Reallocation Committee (the "Committee") is able to discuss negotiations with **MSS** is somewhat limited due to antitrust concerns. However the Committee can report that since December of last year it has been in periodic contact with the lead proponent (ICO) to request general planning information that it might disseminate to its members. As of this writing no such information has yet been received. The Committee does note that it has offered ICO an opportunity to meet with the Committee at the NAB convention, an offer which ICO has tentatively accepted.

One member of the Committee (Tribune Broadcasting) reports that it did initiate discussions with ICO during the summer of 2002. Those discussions culminated in an in-person meeting in July where ICO officials expressed the position that they were unable to continue any dialogue due to the uncertain regulatory environment. Tribune notes that shortly after that meeting the commission issued its one year extension of the negotiating period, and that there has been no further official contact since that time.

3. The current transition plan would be accomplished in two phases. Does such a scheme still make sense? Would the BAS community still prefer a single transition phase? What are the benefits of such a plan. Explain how transition plans (time frame, reimbursement scheme) are affected by the change from MSS only to a mix of MSS and terrestrial operations in the 1990-2025 MHz hand.

As to whether the two-phase conversion process still makes sense in view of the AWS decision, the answer seems to clearly be that it does not. There are now no benefits of such a plan, in SBE's view, because the conversion has changed conceptually. **In** the Second Report and Order in Docket 95-18, the Commission's presumption was that Channel A1 would be needed for **MSS** right away, but that Channel **A2** would not be needed at the outset, and perhaps it might never he. Therefore, an interim step toward narrower bandwidths (or in some markets, retaining 17 MHz channels) could continue, perhaps for a long term. Since the other side of the coin was to allow MSS to begin operations soon. without suffering the full brunt of the reimbursement obligation all at once, and since there might not have been any need to displace broadcasters from Channel A2 (i.e. that Phase **2** might not come to pass at all) it made sense to pause after the displacement from Channel **A1** and see how the MSS industry spectrum needs developed.

Now, it is clear that AWS and MSS are going to inevitably displace broadcasters from both channels, and in the near term rather than over some time. Neither does the AWS and MSS use of the 1990-2025 MHz band break neatly between two BAS/LTTS channels. So, broadcasters will have to be displaced from both channels sooner, rather than later. Because **MSS** has been allowed **a** terrestrial component, it may be assumed that MSS construction will occur earlier than it would have had only the space component been permitted. The timetable for AWS construction is uncertain due to the apparent application of the statutory auction requirement for all CMRS type facilties. However, since the AWS allocation and the MSS allocation each break across the two BAS channels, either service commencing construction will displace BAS/LTTS licensees from both channels at once, and require complete relocation of BAS and LTTS licensees.

In terms of the time frame and reimbursement scheme changes, it would appear that, unless either MSS or AWS licensees are each jointly and severally obligated to bear the initial cost **of** relocation of all BAS and LTTS from both channels (presumably based on which service would commence operations first) and then look to the other service for contribution later, the timing of conversion should be based on the ***later*** of the two services to be licensed in individual markets or nationally to commence operations. SBE would recommend in any case, assuming that AWS will be licensed on a market by market basis via competitive bidding, and assuming that the Commission will not require MSS to front the cost of all BAS/LTTS relocation expenses and to later be reimbursed a portion of those costs by the AWS licensees, the BAS/LTTS relocation should occur after all AWS licensees are determined finally, and after all MSS licensees are determined, whichever is later. SBE would reiterate the need to have relocation costs determined and paid in advance.

The reimbursement scheme is difficult if AWS is to be licensed on a market by market basis, because that would tend to dictate a market-by-market reimbursement scheme **for** BAS/LTTS displacement costs. This is cumbersome, especially since there are both AWS and **MSS** contributors, and since the MSS contributor would presumably be operating in multiple markets at the outset. There would essentially have to be a collective bargaining plan for reimbursement as among the affected entities; a matter that would lead inescapably to antitrust considerations. Broadcasters and LTTS licensees have scrupulously avoided any such plan for exactly that reason. The Commission might assist in resolving such concerns by delineating negotiation procedures with a good deal of specificity, and develop contribution formulae as between MSS and AWS licensees in a given market, or preferably on a national scale.

4. Does the existing transition plan with respect to time frame and market cut-offs continue to make sense if the current two-phase plan is modified? If not, what time frame for transitioning to a new channel plan would be desirable (e.g., length of negotiations, sunsets)? How is this affected by market (i.e., is it different for the large markets, mid-tier markets, and small markets)? Where would you place the breakpoints with respect to market size?

The existing transition plan concerning time frame and market cut-offs cannot be maintained in view of the AWS order. The present, extended deadline of September, 2003 for mandatory negotiations cannot hold, because negotiations have not even begun. They cannot commence, **as** discussed above, unless and until the licensees are determined. and until there is resolved between and among MSS and **AWS** licensees a contribution plan. SBE would suggest that the negotiation period and any transition period. be extended by, at minimum. two years, *so* that the negotiation period would extend to and including September, 2005. It should be subject to further extension based on (1) status of **AWS** licensing at the time; (2) status of MSS licensing at the time; and *(3)* availability of digital **BAS/LTTS** equipment for delivery at the time. These considerations are not affected by market size, since **BAS** and LTTS operations are largely niobile in the affected bands, and there are itinerant issues that will cause the 2025-2110 MHz band to be overloaded in some otherwise uncrowded markets due to scheduled media events, sporting events, and news happenings.

5. What is the nature of use and the intensity of use of the **BAS** spectrum? How does this change with market size and **day/month (i.e.,** what are the differences between "normal" usage **and** usage to cover scheduled events such as sports and other special events? What about unscheduled events, such as natural disasters?)?

6. Would transition be easier if the Commission were to continue to allow analog operation (or other voluntary channelization) on a secondary **basis** on the remaining **BAS** frequencies in **all/some/smaller** markets (**i.e.,** could **BAS** stations in some areas continue to operate on current **BAS** channels 3-7 using existing analog equipment on a secondary basis)? What would he the coordination consequences? What are the pros and cons of such an approach?

We would not advocate such an approach. We do not feel it would make the transition easier, for the reasons discussed below.

Pro:

1) Analog operation on channels *3-7* of the old channel plan might prove sufficient in some markets and therefore relieve some need for equipment upgrades.
2) Even in larger markets, post-conversion, the ability to use analog gear on a secondary basis would allow some stations to keep such equipment as backup.

Con:

1) If the door were opened for certain markets to operate under an "old **3-7**" channel plan, stations in those markets could be placed in an unfavorable bargaining position vis-à-vis MSS and AWS entities.
2) The wideband analog equipment currently in use will rapidly become unsupportable, making it at best a short-term solution. Furthermore, it has been demonstrated that attempting to use such equipment in 12-MHz channels is unworkable.
3) Frequency coordination would be greatly complicated under such a plan. If local users in a market were operating analog under "old **3-7**" and found themselves secondary to an itinerant user covering a news or sporting event using a digital equipment on a new channel that overlaps two old, analog channels, the consequences could be extremely disruptive. To minimize such disruption by programming the new equipment with both old and new channel plans, and to expect operators to know in which markets to use which plans, would be expensive at best and completely impractical at worst. There is **no** apparent incentive for either manufacturers or operators of new equipment (with primary status) to accommodate such (secondary) users.
4) Both equipment manufacturers and itinerant users (e.g., network entities and their vendors/contractors) obviously prefer to deal with a single channel plan nationwide.

5) In **SBE's** national frequency coordination program. we have seen an ever-greater need for uniformity of the coordination experience across all markets. The dual-status plan suggested in this question would he a step away from that goal.

Conclusion:

It would not be in the best interests of the broadcasters for the Commission to leave the door open for analog operation under a subset of the old analog channels. Rather, the conversion to narrower channels—and the requisite conversion to digital operation to accommodate the narrowed channels—should be effected uniformly in all markets, so that the costs are known up-front in the negotiation period.

7. What is the state of **BAS** digital equipment today and where do you see it in a year, **two** years, etc.?

BAS digital equipment is being manufactured and sold as standard equipment today with the current technology mature enough to support adjustable COFDM bandwidths of 6,7, or 8 MHz digital pedestals. The key ingredient that the industry is lacking, is the practical day to day experience with making COFDM digital ENG shots and using it to it's fullest potential. The ENG operators are a key ingredient in making the transition to digital ENG operation, which as COFDM becomes more pronounced so will the operator's experience level.

Existing systems for the most part are 8 MHz pedestal COFDM systems. For full transition to Phase II, **6** MHz pedestal COFDM will be required for major markets where split narrow channel operations are standard. Manufacturers are beginning to ship **6** MHz pedestal capable digital systems. In the next one to two years' digital ENG equipment will be more mature in regards to the user interface but the core technology will not change significantly except for improvements and added efficiencies in MPEG compression algorithm development.

How many different manufacturers are producing or plan to produce equipment?

Currently there are at least **7** manufacturers of digital encoding and modulation equipment. Additionally all microwave manufacturers are producing digital capable radio equipment.

What are the capabilities of existing and planned digital **BAS** equipment?

See above comments. Dependent by manufacturer, existing equipment can be capable of supporting both external and integrated digital encoding and COFDM modulation. Existing equipment has been essentially 8 MHz COFDM. Planned digital **BAS** equipment will be fully integrated for size, cost and ease of maintenance and control. Additionally, selectable **6, 7** and **8** MHz digital pedestal COFDM systems are available this year to support major market split channel, narrow (Phase II) 12 MHz channel plan. (it should be noted that split channel operation with two **6** COFDM pedestals within a 12 MHz channel has not yet be proven in field operations)

Is this equipment capable of operating **on** the narrow (phase **2)** channels in the **2025 – 2110**

MHz band?

Yes. however, in major market areas older installed 8 MHz pedestal COFDM digital systems will need to be modified to or replaced with systems capable of 6 MHz COFDM pedestal systems.

Can this equipment handle full DTV compatible transmissions?

In day-to-day applications, current ENG equipment does not handle DTV compatible transmissions. Most DENG transmissions today are at a user data rate of 5.529 Mbits for the most robust transmission. At 5.529 Mbits, the picture and audio quality is better than Standard definition analog transmissions. Typically DENG equipment does not have SMPTE 310m interfaces.

Future utilization of direct COFDM HD feeds from ENG equipment will be several years in the future and dependent on continual improvement in MPEG compression development gains efficiencies which allows lower power consumption and therefore, smaller package size to support ENG operations.

HD ENG transmissions from vans with sufficient capacity to carry additional equipment is feasible today utilizing single carrier modems and line of sight operation, which severely restricts mobility of the ENG van. This approach is not considered cost effective in today's market environment.

Can the equipment multiplex several feeds?

ENG equipment is not currently required and therefore not designed to multiplex several feeds. Although this capability is state of the art, it would require the development and addition **of** this feature set existing radio designs.

How is the quantity and quality of the transmissions affected by the smaller channels?

The smaller channel spacing will affect adjacent channel user's C/I relationships which forces the user to choose a narrower digital pedestal (**8** MHz to ***6*** MHz) or the most robust **8** MHz transmission with the lowest carrier to noise (C/N) requirement, both schemes reduce the number of bit's that can be put thru the channel, with fewer bit's the quality is heavily dependent on motion content in the scene.

8. What percentage of BAS licensees (by market size) already have digital BAS equipment?

This question cannot be answered without a detailed survey. To try to provide some order of magnitude to this question the following facts may be useful:

Digital ENG equipment first started to ship in 2000. Of the total 2002 shipments of digital capable ENG radios, less than 20% have been shipped with digital systems implemented. Of the total ENG radios shipped in the same time period, including analog only radios, the percentage drops below 15%. Without a formal survey it is impossible to accurately estimate the percent of digital ENG equipment within the total ENG installed base. A highly unscientific estimate would yield a high estimate of less than 2%. It should be noted that the number ofdigital ENG systems shipped in 2002 is over 50% of the total DENG systems shipped to date.

9. Over what time frame do you contemplate BAS licensees moving to new digital equipment? On average, what's the remaining utility and life expectancy of existing BAS equipment?

This is a difficult question to answer, as it is highly dependent on external market factors. Assuming that the 2 GHz relocation was not to occur, one would not envision a full transition to digital in the near term. Because of the higher cost of digital equipment, it is envisioned that the market would consist of a mixture of analog and digital equipment. A market outlook might foresee digital becoming a 30 to 40% share of the installed equipment base in 8 to 10 years. The remaining utility and life expectancy of existing BAS equipment without the 2GHz relocation cannot be estimated without a detailed survey of the installed base. Typically ENG equipment is designed for 20 years based on its operating environment and state of technology development.

10. For an average station, assuming equipment is available, how long would it take to convert from analog **to** digital operations? What are the costs involved? How does time and cost differ based on type of facility (**e.g.,** mobile pickup vs. STL)?

An informal estimate of the time to transition one electronic news gathering (ENG) transmit and one ENG receive site system at an average television station to digital is one month. The actual process entails adding and integrating a **COFDM** encoder/transmitter, mast mount power amplifier, transmit antenna switch and an alternate omnidirectional transmit antenna on the ENG vehicle. **A** replacement low noise block converter, 2 GHz receiver with IF output, **COFDM** demodulator, and some manner of remotely monitoring the signal strength (either BER or **AGC)** needs to be installed at the receive site.

The aforementioned time period assumes needed replacement equipment has already been received, no weather or RF safety delays for any work that needs to be done on a tower (such as to replace block down converters), and that alternate transmitter and receive facilities are available for use during this transition. The time period for integration may be longer if such alternate facilities are not available consequently forcing work to be done on systems still in daily use, if a mix of analog and digital equipment and capability must be retained for the ongoing functionality of legacy systems, or if the newly installed gear doesn't operate appropriately and needs to be repaired or replaced.

The estimated costs to convert one typical ENG vehicle to digital are between $40,000 and *$55,000* depending on equipment manufacturer and exact configuration. The costs for converting one receive site are between $20,000 and *$25,000* assuming that the existing receive antenna can be reused. This cost estimate is exclusive of taxes, shipping, **FCC** license **preparation/application,** and the labor for the installation itself.

We assume that the inquiry on migration of STL equipment is associated with those stations that currently have facilities in the 2 GHz band which may be displaced. Such facilities may be relocated to the *7* or **13 GHz** bands. **An** estimate ofthe cost for a single thread 7 or 13 GHz STL transmitter, receiver, waveguide and antennas, and associated tower work (but less taxes, shipping etc.) would be from *$75,000* to **$100,000**. We note that transmission in other replacement bands such as 7 or 13 GHz may require multiple "hops" to replace the long path length capability that the 2GHz band provides. The total system cost may increase by as much as 75% per additional necessary hop.

11. What new technical issues, if any, are raised by having AWS (or at least fixed and mobile services) instead of MSS adjacent to the "final" BAS band?

As a result of the February 10, 2003, ET Docket 00-258 (the "3G" or "AWS" (Advanced Wireless Systems) rulemaking), 15 of the 35 MHz originally re-allocated from BAS to MSS will instead go to PCS, for 3G/AWS uses. That is

OLD = 1,990-2,025 MHz to **MSS**

NEW = 1,990-2,000 MHz to PCS, for 3G/AWS uses

2,000-2,020 MHz to **MSS**

2,020-2,025 MHz to PCS, for 3G/AWS uses

Note that this new reallocation to PCS now straddles both existing TV BAS Channel A1 (1,990-2,008 MHz) and existing TV BAS Channel A2 (2,008-2,025 MHz). Therefore, the present plan for a Phase 1 transition where MSS initially uses just 1,990-2,008 (forcing broadcasters to initially vacate just Channel A1), and where **MSS** only starts using 2,008-2,025 MHz when it has tilled up 1,990-2,008 MHz at some future date, is no longer viable. Broadcasters will instead now have to vacate both Channels A1 and A2 "up front."

Because the February 10, 2003, IB Docket 01-185 R&O (the Terrestrial **MSS,** *aka* Ancillary Terrestrial Component, or "ATC," rulemaking) selected the "forward band mode" for terrestrial MSS operations, only low-power MSS handsets will be using 2,000-2,020 MHz, so this does not raise **a** brute force overload (BFO) issue to TV BAS operations at 2,025-2,110 MHz (present TV BAS Channels A3 through A7) or to 2,450-2,483.5 MHz (TV BAS Channels A8 and A9) or to 2,483.5-2,500 MHz (grandfathered operations on former TV BAS Channel A10). It does, however, raise BFO issues for AWS base stations operating at either 1,990-2,000 or 2,020-2,025 MHz. Further, because there can now be terrestrial Big Leo MSS transmitters at 2,492.5-2,498 MHz, those stations will also raise BFO issues to TV BAS operations at both 2.5 and 2 GHz. Fortunately, the IB 01-185 R&O was quite clear in stating, at Paragraph 116, and again at Appendix C1 ("Technical Evaluation of 2 GHz **MSS** ATC Proposals"), Page 168, that terrestrial MSS base stations will have to protect ENG RO sites from BFO. Presumably this same policy will also apply to 3G base stations.

Both low-power **MSS** handsets, and high and low-power PCS AWS operations, raise adjacent-channel interference ratio (ACIR) issues. ACIR is, in turn, a function of ACLR (adjacent channel leakage ratio) and ACS (adjacent channel selectivity). ACIR, ACLR and ACS are ITU 8F/587 ("Coexistence Between IMT-2000 TDD and FCC Radio Interface Technologies Operating in Adjacent Bands and in the Same Geographical Area") terms. ACS is a function of the selectivity of the protected station's receiver, whereas ACLR is a function of the interfering station's transmitter. The relationship between ACIR, ACLR and ACS is as follows:

$$ACIR = [1/(1/ACLR + 1/ACS)]$$

If this formula looks familiar it is because it is the same formula for two resistors in parallel, and the two interference modes of ACLR and ACS can be thought of in terms of two parallel resistors. That is, if you have a 100 kohm resistor in parallel with a 10-megohm resistor, the total resistance of 99.0 kohms is mostly a function of the 100 kohm resistor and not very much a function of the 10-megohm resistor. But, if you have two 100 kohm resistors in parallel, then the aggregate resistance of 50 kohms is significantly affected by each resistor.

In a similar tashion. the aggregate interference from adjacent channel operations (ACIR) is a function both ofthe selectivity of the receiver being used by the protected station, and is also a function of the out-of-channel and/or out-of-band spurious energy emitted by the undesired transmitter. That is, ACS is helpful for allowing a receiver to reject any undesired out-of-band or out-of-channel signal, but is of no help if the undesired transmitter is radiating spurious energy that falls in the pass band (*i.e.*, channel) of the protected station. This means that low power terrestrial MSS handsets, or portable AWS devices, must have sufficiently good out-of-channel and out-of-band emission limits so that even if such a handset or device is being used near a 2 GHz TV BAS receive site, the out-of-band emissions from the MSS handset or AWS device, seen as in-channel interference by the protected TV BAS receiver, is below the effective noise floor of the 2 GHz TV BAS system. For an AWS base station, with the possibility of much higher EIRPs, correspondingly more stringent ACLRs would be necessary.

So this becomes a balancing act between ACLR and ACS. A 2 GHz TV BAS receiver with an excellent ACS (because it uses, say, a double conversion IF, with each IF using SAW filters), is wasted if the undesired adjacent band transmitters have poor ACLRs. And requiring undesired adjacent band transmitters to have heroic ACLRs is wasted if the TV BAS receivers they are trying to protect have a poor ACS. Put another way, both the ACLR and ACS need to be "100 kohm" resistors, not one a 100 kohm resistor and the other a 10 megohm resistor. This will require input from MRC about the ACS for modem-day 2 GHz TV BAS receivers, to allow deriving a corresponding range of ACLRs that MSS handsets, portable 3G devices, and 3G base stations will need to have so as not to "waste" the ACS performance of 2 GHz TV BAS receivers.

The issue of how good of an ACLR that a MSS handset or AWS device will need to have to ensure that no interference to re-farmed 2 GHz TV BAS operations is caused is further based on a plethora of assumptions about credible worst case separations and geometries between a MSS handset or AWS device and TV BAS 2 GHz receiving systems. The problem is more manageable for fixed AWS stations, and for terrestrial Big Leo base stations, because these separations and geometries can be calculated in advance, and additional band pass filtering for fixed station transmitters is entirely practical. But the amount of filtering that is practical for a handset device or portable device is limited by size, weight, and cost constraints, because these would be mass produced devices.

The required ACLR for MSS handsets or portable AWS devices can be estimated given a) the highest allowable MSS handset/portable AWS device EIRF'; b) the receiver noise floor of the protected TV BAS system; c) the assumed gain of the 2 GHz receiving antenna; d) the assumed minimum separation between the MSS handset or AWS device and the 2 GHz receiving antenna; and e) the geometry between the MSS handset or AWS device and the 2 GHz receiving antenna. **For** example, if we assume an MSS handset or AWS device EIRF' of 1 Watt (0 dBW), a 2 GHz TV BAS receiver noise floor of -90 dBm, a 2 GHz receiving antenna gain of 20 dBi, a separation of 500 feet, and a geometry that places the MSS handset or AWS device in the main beam of the 2 GHz receiving antenna, an ACLR of -27.9 dB is required. If the separation distance is instead 1,000 feet an ACLR of just -21.8 dB is sufficient. And if the separation distance is just 100 feet an ACLR of -41.8 dB becomes necessary.

For example, what would happen if several MSS cell phones and/or portable AWS devices are simultaneously in use from the observation deck on the. 86th floor of the Empire State Building, and just 50 feet above that deck is an omnidirectional 2 GHz RO antenna, with just 20 dB of elevation pattern rejection towards the ESB observation deck? Food for thought.

Finally, would a MSS cell phone or a 3G portable device with an ACLR in the -30 dB range be a reasonable match to the ACS of a modem-day 2 GHz TV BAS receiver? If the ACS of such receivers is also in the -30 dB range, this would be a good match (*i.e.*, two 100 kohm resistors in parallel). But if the ACS of a modem-day 2 GHz TV BAS receiver is more like -50 dB, then we would have the 100 kobm resistor in parallel with a 10 megohm resistor mismatch.

Bottom line: I don't see how this issue can be resolved by jumping directly to a R&O; a FNPRM needs to get issued.

12. What are the benefits **of** modifying the channel plan to provide seven uniformly sized channels, rather than one channel larger than the remaining **six?** Do licensees plan on using the larger channel (channel **1)** to provide higher data rates?

It appears that the real issue is selecting a band plan so that channel center frequencies (and split-channel center frequencies) fall on integer multiples of 250 kHz, which is the industry-standard step increment for the frequency synthesizers in BAS gear. Thus, a hand plan with six 12 MHz channels and one I3 MHz channel, or a band plan with five 12 MHz channels and two 12.5 MHz channels, would work, in that the center frequencies of those channels and their channel splits would all be integer multiples of 250 kHz, but a band plan composed of seven 12.142857 MHz channels would be problematic, as would even seven 12.1-MHz wide channels, whose channel splits would require a frequency synthesizer with a 50-kHz step resolution.

So the idea has been proposed of using seven, 12-MHz-wide channels, plus **two** 0.5-MHz-wide data return link (DRL) bands, one at each end of the re-farmed 2,025-2,110 MHz TV BAS band. These DRL bands would be available for narrowband downstream control channels to the TV Pickup transmitter (*e.g.*, ENG truck, helicopter, blimp, etc.), letting the mobile transmitter know if it could reduce its EIRF' for the path in question (and possibly with sufficiently fast processing to allow dynamic power control even for fast-moving airborne platforms). I am thinking maybe ten SO-kHz wide DRL channels at each end of the 2 GHz band, with reverse band protocols. That is, a TV Pickup station operating on re-farmed Channels A1, A2, A3, A4 or A5 would use one of the narrowband DRL channels just above re-farmed Channel A7 (2,097.5-2,109.5 MHz, under this scenario), and a TV Pickup station operating on re-farmed Channels A4, A5, A6 or A7 would use one of the narrowband DRL channels just below re-farmed Channel A1 (2,025.5-2,037.5 MHz). This would still give channel (and split-channel) center frequencies evenly divisible by 250 kHz.

At Paragraph 48 of the ET Docket 01-75 R&O (Updating and Harmonizing of the Part 74 BAS rules), the Commission adopted automatic transmitter power control (ATPC) for BAS, even though it recognized that most BAS links wouldn't be able to use this feature, since most BAS links are one-way (*i.e.*, simplex). The creation of downstream narrow band DRL channels would allow ATPC for 2 GHz TV Pickup operations, which the Commission should like. Further, because DRL channels would be narrow band and would only need to relay limited data (*e.g.*, the BER of the signal being received at a central RX site), the DRL transmitter could use low power (1 watt?) and a very robust modulation type (QPSK?). Such a low power DRL signal, even when co-located with a 2 GHz RX at an ENG RO site, should be a compatible use if a reverse-band protocol is used.